

ABSTRAK

ANALISIS PENGARUH FENOMENA *EL NINO* DAN *LA NINA* TERHADAP PERUBAHAN TUTUPAN LAHAN (Studi Kasus: Kabupaten Serang, Banten)

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Fenomena *El Nino Southern Oscillation* (ENSO) merupakan salah satu fenomena iklim global yang memengaruhi pola cuaca, suhu permukaan daratan, dan kondisi vegetasi pada suatu wilayah. ENSO dapat memengaruhi perubahan tutupan lahan melalui perubahan kondisi iklim, terutama curah hujan dan suhu permukaan daratan yang menyebabkan kekeringan maupun peningkatan kelembapan. Penelitian ini bermaksud serta menganalisis pengaruh fenomena ENSO terhadap perubahan tutupan lahan di Kabupaten Serang, Banten.

Penelitian menggunakan data spatio-temporal periode 2019-2024 yang meliputi curah hujan CHIRPS, suhu permukaan daratan dari citra Sentinel-3, kerapatan vegetasi dan kerapatan bangunan dari citra Sentinel-2A. Metode yang digunakan meliputi interpolasi *Inverse Distance Weighted* (IDW) untuk menghasilkan persebaran curah hujan, *Split Window Algorithm* (SWA) untuk menghasilkan persebaran suhu permukaan daratan, *Normalized Difference Vegetation Index* (NDVI) untuk mengidentifikasi kerapatan vegetasi, dan *Normalized Difference Built-up Index* (NDBI) untuk mengidentifikasi kerapatan bangunan. Analisis hubungan antarvariabel dilakukan menggunakan korelasi *Pearson* dan regresi linier berganda.

Hasil penelitian menunjukkan terjadinya perubahan tutupan lahan yang ditandai dengan penurunan proporsi lahan nonbangunan dari sekitar 65% menjadi 45% selama periode penelitian. Berdasarkan hasil uji korelasi dan regresi linier berganda, fenomena ENSO berpengaruh signifikan terhadap perubahan tutupan lahan selama periode 2019-2024. Namun, pengaruh variabel curah hujan, suhu permukaan daratan, dan kerapatan vegetasi terhadap perubahan tutupan lahan hanya sebesar 40,1%, sedangkan sebesar 59,9% sisanya dipengaruhi oleh faktor lainnya.

Kata Kunci: ENSO, Curah Hujan, Suhu Permukaan Daratan, Kerapatan Vegetasi, Kerapatan Bangunan, Pengaruh

ABSTRACT

ANALYSIS OF THE IMPACT OF EL NINO AND LA NINA PHENOMENA ON LAND COVER CHANGES (Case Study: Serang Regency, Banten)

By

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The *El-Nino Southern Oscillation* (ENSO) is a global climate phenomenon that influences weather patterns, land surface temperature, and vegetation conditions in a region. ENSO can affect land cover change through climate variability, particularly changes in rainfall and land surface temperature that may cause drought or increased humidity. This study aims to identify land cover changes and analyze the influence of ENSO on land cover change in Serang Regency. This study employed spatio-temporal data from 2019-2024, including CHIRPS rainfall data, land surface temperature derived from Sentinel-3 imagery, vegetation density and building density derived from Sentinel-2A imagery. The methods used consisted of the Inverse Distance Weighted (IDW) interpolation for rainfall processing, the Split Window Algorithm (SWA) for land surface temperature extraction, the Normalized Difference Vegetation Index (NDVI) for vegetation density analysis, and the Normalized Difference Built-up Index (NDBI) for building density analysis. Pearson correlation and multiple linear regression analyses were applied to examine the relationships among variables. The results indicate that land cover change occurred during the study period. As shown by a decrease in non-built-up land proportion from approximately 45%. Based on the correlation and multiple linear regression analyses, ENSO had a significant influence on land cover change during the 2019-2024 period. However, the contribution of rainfall, land surface temperature, and vegetation density variables to land cover change was only 40,1%, while the remaining 59,9% was influenced by other factors outside the variables examined in this study that also contributed to land cover change in the study area.

Keywords: ENSO, Rainfall, Land Surface Temperature, Vegetation Density, Built-up Density, Influence